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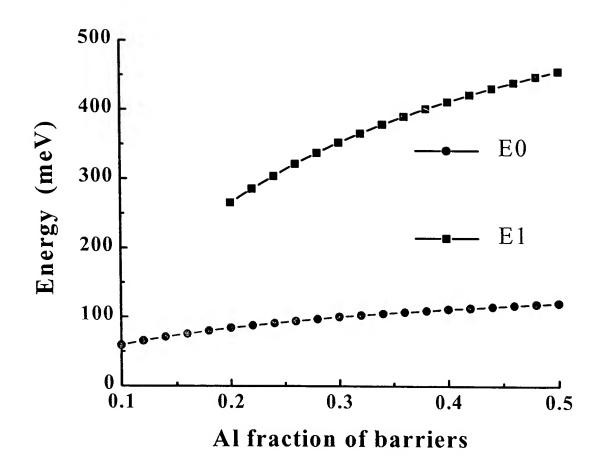
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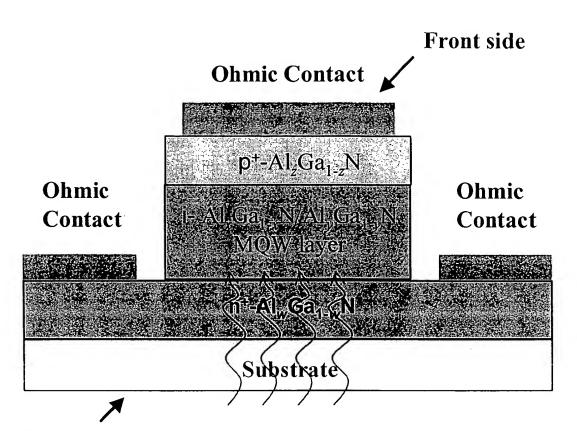
	]
$p^+$ - $Al_zGa_{1-z}N$	
	+
$Al_{\nu}Ga_{1-\nu}N$	4 )
$Al_xGa_{1-x}N$	_
Alternately layered	
$Al_xGa_{1-x}N/Al_yGa_{1-y}N$ films	MON
$111_{\chi}$ $001_{-\chi}$ $111_{\gamma}$ $001_{-\gamma}$	$\rightarrow$ MQW
$Al_xGa_{1-x}N$	layer
$Al_yGa_{1-y}N$	]
$Al_xGa_{1-x}N$	
$Al_yGa_{1-y}N$	
	,
$n^+$ - $Al_wGa_{1-w}N$	
A INT Glass	4
AlN film	4
Substrate	

FIG. 1



 $\hat{\zeta}_{+}^{-1}$ 

FIG. 2



Polished backside

FIG. 3

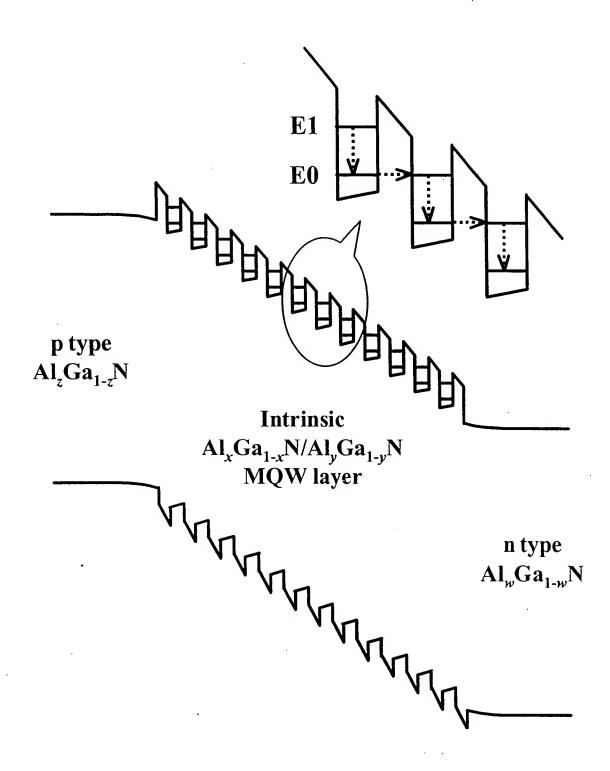


FIG. 4

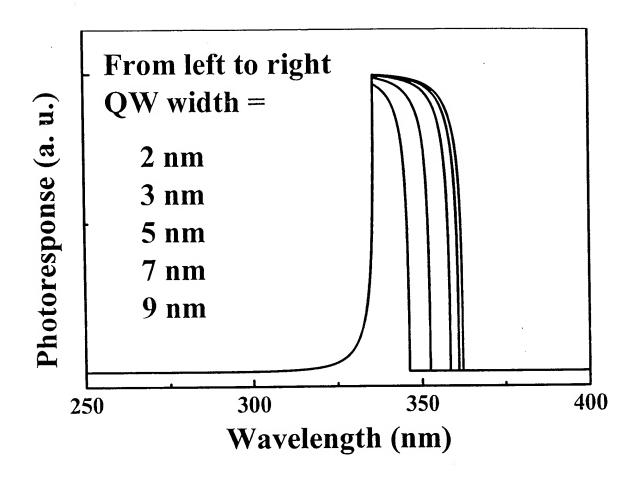


FIG. 5

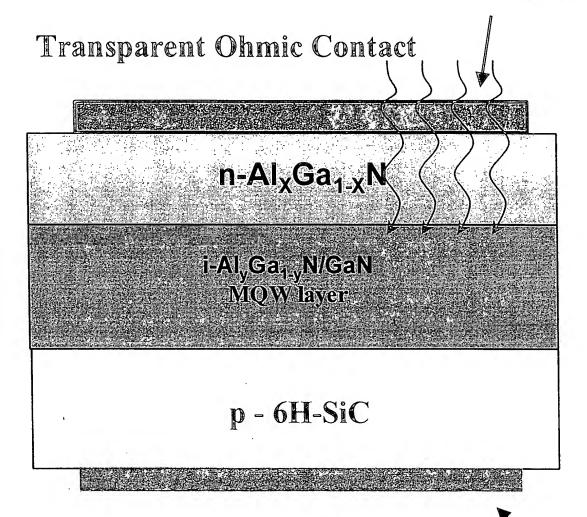
_		
	Al <sub>0.33</sub> Ga <sub>0.67</sub> N(10 nm) cap layer	
	Al <sub>0.25</sub> Ga <sub>0.75</sub> N(4 nm)/Al <sub>0.33</sub> Ga <sub>0.67</sub> N(4 nm) X 25 period, Mg doped, 1x10 <sup>19</sup> cm <sup>-3</sup>	Ma danad
		Mg doped (1x10 <sup>19</sup> cm <sup>-3</sup>
	Al <sub>0.33</sub> Ga <sub>0.67</sub> N, 4 nm	
	Al <sub>0.25</sub> Ga <sub>0.75</sub> N, 4 nm	
G	aN(4 nm) /Al <sub>0.25</sub> Ga <sub>0.75</sub> N(7 nm) X 25 period	
	Al <sub>0.25</sub> Ga <sub>0.75</sub> N, 7 nm	
	GaN, 4 nm	undoped
	Al <sub>0.25</sub> Ga <sub>0.75</sub> N, 7 nm	
	GaN, 4 nm	
	Al <sub>0.25</sub> Ga <sub>0.75</sub> N, 5 nm	
	n-GaN, 1 um Si doped, 1x10 <sup>18</sup> cm <sup>-3</sup>	Si doped
	AlN, 10 nm	
	Sapphire (0001), c-axis	·

FIG. 6

n-Al<sub>0.2</sub>Ga<sub>0.8</sub>N, 1.5 um Si doped, 1x10<sup>18</sup> cm<sup>-3</sup>  $Al_{0.27}Ga_{0.73}N$ , 5 nm GaN, 4 nm X 40 period QW GaN, 4 nm  $\overline{Al_{0.27}Ga_{0.73}N}$ , 7 nm GaN, 4 nm Al<sub>0.27</sub>Ga<sub>0.73</sub>N, 7 nm GaN, 4 nm  $Al_{0.27}Ga_{0.73}N$ , 5 nm AlN, 10 nm p- 6H-SiC, 1 x 10<sup>18</sup> cm<sup>-3</sup>

**FIG.** 7

Front side



**Ohmic Contact** 

Back side